

What is claimed is:

1. A method, comprising:
converting a plurality of carrier signals into a digital data stream;
extracting from said digital data stream, data carried by at least two
5 carrier signals; and
combining at least portions of data extracted from said at least two
carrier signals to form a complete bitstream, said extracted data having
associated with it stream identifier and sequence code information for,
respectively, identifying the complete bitstream corresponding to the extracted
10 data and determining the position of the extracted data within the complete
bitstream.
2. The method of claim 1, wherein said complete bitstream
comprises a transport stream, said method further comprising:
15 selecting those transport packets within the extracted data having a
stream identifier corresponding to said complete bitstream; and
arranging the selected packets according to the respective sequence
codes to form said complete bitstream.
- 20 3. The method of claim 1, wherein the extracted data comprise
transport stream packets according to a first transport format, and the complete
bitstream comprises a transport stream packet of the first transport format.
4. The method of claim 1, wherein the extracted data comprise
25 transport stream packets according to a first transport format, and the complete
bitstream comprises a transport stream of a second transport format.
5. The method of claim 4, wherein transport stream packets
according to said first transport stream format are carried within a payload
30 portion of transport stream packets according to said second transport format.
6. The method of claim 5, wherein said stream identifier and said
sequence code is stored in a header portion of said transport stream packets
according to said first format.

7. The method of claim 1, wherein said step of directly converting comprises:

band limiting a received signal to pass said plurality of carrier signals;
and

5 converting the band limited received signal to a digital signal.

8. The method of claim 1, wherein said step of simultaneously extracting comprises:

derotating each of the digitized plurality of carrier signals to produce
10 respective derotated carrier signals; and

demodulating each of at least two filtered carrier signals to extract
therefrom respective data bearing streams.

9. The method of claim 8, wherein said step of simultaneously
15 extracting further comprises:

filtering each of the derotated carrier signals to reduce non-channel
spectral energy; and

decimating each of the filtered signals to reduce the number of data-
representative samples.
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10. The method of claim 1, wherein some of said extracted data has
associated with it channel identification and time of transmission information
for, respectively, indicating which of said plurality of carrier signals will carry
portions of said complete bitstream and the time said portions will be carried.
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11. The method of claim 1, wherein said step of simultaneously
extracting includes:

identifying a carrier signal having data corresponding to a desired
complete bitstream; and

30 processing said identified carrier signal to extract said data
corresponding to said desired complete bitstream.

12. The method of claim 11, wherein said step of simultaneously extracting further includes:

- determining when said identified carrier signal will include said data corresponding to said desired complete bitstream, said identified carrier signal
5 being processed at said determined time.

13. The method of claim 11, wherein some of said extracted data has associated with it channel identification information for indicating which of said plurality of carrier signals will carry said data corresponding to said desired
10 complete bitstream.

14. The method of claim 13, wherein said extracted data is associated with said channel identification information and also is associated with time of transmission information for indicating the time when said identified carrier
15 signal will include said data corresponding to said desired complete bitstream.

15. The method of claim 6, wherein some of said transport stream packets according to said first format have stored therein within said header portion channel identification and time of transmission information for,
20 respectively, indicating which of said plurality of carrier signals carry portions of said complete bitstream and the time said portions will be carried.

16. A method, comprising:
band limiting a received signal to pass a plurality of carrier signals, each
25 of said carrier signal having modulated thereon, and within a channel bandwidth, a respective data bearing stream;
converting the band limited received signal to a digital signal;
derotating each of the digitized carrier signals to produce respective derotated carrier signals;
30 demodulating each of at least two filtered carrier signals to extract therefrom respective data bearing streams; and
combining data from at least two data bearing streams into a resultant data stream, said at least two data bearing streams comprising respective portions of said resultant data stream.

17. The method of claim 16, further comprising:
filtering each of the derotated carrier signals to reduce non-channel spectral energy; and
decimating each of the filtered signals to reduce the number of samples
5 representing each data bearing stream.

18. The method of claim 16, wherein said resultant data stream comprises a transport stream, said method further comprising:
identifying those transport packets within said first and second data
10 bearing streams being associated with a stream identifier corresponding to said resultant stream; and
arranging the identified packets according to a respective sequence codes associated with said identified packets to form said resultant stream.

19. The method of claim 18, wherein each of said simultaneously demodulated data bearing streams are transport streams according to a first transport format, and said resultant data bearing stream is a transport stream according to a second transport format.

20. The method of claim 16, wherein the data bearing streams comprise transport streams according to a first transport format, and the resultant data stream comprises a transport stream of said first transport format.

21. The method of claim 16, wherein the data bearing streams comprise transport streams according to a first transport format, and the resultant data stream comprises a transport stream of a second transport format.

22. The method of claim 21, wherein data according to said second transport stream format is carried within a payload portion of data packets according to said second format.

23. The method of claim 22, wherein each of said data packets according to said second format includes, in a header portion, a stream identifier and sequence code for data carried within a respective payload portion.

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24. A method, comprising:

band limiting a received signal to pass substantially those frequencies occupying a spectral region between a first frequency f_1 and a second frequency f_2 ;

10 converting, using an analog-to-digital converter having a sampling rate f_s , the band-limited signal to produce a digital signal therefrom, said sampling rate f_s being greater than f_2 ;

derotating each of a plurality of data bearing signals within said digital signal to produce respective derotated signals;

15 filtering each of the respective derotated signals to remove channel energy outside of the respective defined channel;

decimating each of the filtered and derotated signals to reduce the number of samples representing each data bearing signal;

20 demodulating each of at least two filtered carrier signals to extract therefrom respective data bearing signal; and
combining at least respective portions of at least two of the resulting decimated data bearing signals into a single data signal.

25. Apparatus, comprising:

25 an analog to digital converter, for converting a plurality of carrier signals into a digital data stream;

a plurality of channel processors, for extracting from said digital data stream, data carried by respective carrier signals; and

30 a processor, for combining at least portions of said data extracted from at least two carrier signals to produce a complete bitstream, said extracted data having associated with it stream identifier and sequence code information for determining, respectively, the complete bitstream corresponding to the data and the sequence within the complete bitstream of the data.

26. The apparatus of claim 25, wherein each of said channel processors comprises:

a derotator, for derotating a respective digitized carrier signal to produce a respective derotated carrier signal; and

5 a demodulator, for demodulating said respective derotated carrier signal to extract therefrom a data stream.

27. The apparatus of claim 25, wherein each of said channel processors further comprises:

10 a filter, for filtering the respective derotated signals to remove channel energy outside of the respective defined channel; and

a decimator, for decimating each of the filtered and derotated signals to reduce the number of samples representing the respective data.

15 28. The apparatus of claim 25, further comprising:

a band limiter, to primarily pass only the plurality of carrier signals and respective data modulated thereon; wherein

said analog to digital converter utilizing a sampling rate less than twice the maximum frequency of interest within the plurality of data channels.

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29. The apparatus of claim 25, wherein plurality of carrier signals substantially conform to a commonly polarized group of channels provided by a transponder.